National Park Service
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San Francisco Bay Area Inventory and Monitoring Network
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Inventory and Monitoring 2006-2007—A Year in Review

The San Francisco Bay Area Inventory and Monitoring Network (SFAN) coordinates biological inventories and long-term monitoring of natural resources within National Parks in the region. Projects highlighted below include work from Golden Gate National Recreation Area, John Muir National Historic Site, Muir Woods National Monument, Pinnacles National Monument, and Point Reyes National Seashore.

Inventories

Inventory Summary Report

Our year began with the completion of the long-awaited SFAN Inventory Summary Report. The 57-page document summarizes the biological and geophysical inventories conducted from 2000-2004; details each inventory; highlights major findings; lists available products; and provides an administrative record of the program. The full document and completed inventory reports can be found at: http://www1.nature.nps.gov/im/units/sfan/Inventory/inventories_complete.cfm.

Rare Plant Species Inventory

The Rare Plant Inventory Report was drafted for Golden Gate National Recreation Area. The inventory of rare plants was started by the Golden Gate National Parks Conservancy through network inventory funding in 2001. Field crews located rare plants, determined their status and mapped them. The final report covers five years of field investigations. The final report will be completed upon receiving peer review comments.

Long-Term Monitoring

Water Quality Monitoring

A triumph for the water quality monitoring program this year was the completion and approval of the water quality protocol after two years of work by dedicated staff, and included an intensive peer review process. The protocol includes monthly sampling at 26 sites and is currently being implemented at four NPS park units: Point Reyes NS, Golden Gate NRA, John Muir NHS, and Pinnacles NM. This year the new bacteria analysis lab was unveiled at the Pacific Coast Science and Learning Center. The lab makes collecting and processing water samples easier and less expensive, improving quality and efficiency of our monitoring. The lab also increases opportunities for collaboration with partner organizations (e.g., Tomales Bay Watershed Council) and is a great educational tool for school groups that conduct scientific inquiry lessons.

Pinniped Monitoring

Harbor seal and elephant seal monitoring continued at Golden Gate and Point Reyes in 2006/2007. Much of the work was led by an AmeriCorps member who coordinated volunteers, assisted training, entered data, and conducted surveys.

Northern Elephant Seals

The population estimate of 2,285 elephant seals at Point Reyes National Seashore in 2007 marks an all time high since their arrival at the park in the mid 1970s. These seals were counted at least once a week from December through

AmeriCorps member Kristen Truchinski counting elephant seals.

March at the three breeding sites in Point Reyes: Drakes Beach, Point Reyes Headlands, and South Beach. In addition, more than 200 weaned pups were tagged and surveys conducted to resight animals.

Harbor Seals

Harbor seals were monitored from February through August in 2007. Over 34 volunteers were trained in February and over 269 surveys were conducted at 10 locations at Golden Gate and Point Reyes. Data have been entered and are undergoing quality control. Data will be analyzed and an annual report will be forthcoming in 2007.

Fisheries biologists Michael Reichmuth and Casey del Real collect data.

Salmon Monitoring

Coho and steelhead monitoring is conducted during three crucial periods in the life cycle of the salmon: juvenile (summer snorkel and electro-fishing surveys), adult (winter spawner surveys) and smolt (spring migrant trapping). Spawner survey results indicated low numbers during the 2006-2007 coho salmon run. The Olema Creek watershed total redd production for this year class declined by 9% from the 2003-2004 year class levels. The largest decline was observed in Redwood Creek where total redd production declined by 44% for this year class. In contrast, preliminary coho smolt production estimates indicated higher than normal overwintering survival rates which ranged from 58% in Redwood Creek to 82% in Pine Gulch. During spring trapping, a total of 20 adult steelhead were observed migrating downstream. Biologists also observed higher than normal numbers of steelhead smolts and fry.

Northern Spotted Owl Monitoring

This year's spotted owl monitoring showed two "firsts" for Marin County: a non-nesting year for spotted owls and a nesting pair of barred owls. Of the 48 spotted owl sites being monitored in Marin County, only one nest was found. I&M staff monitored the 25 of 48 sites on NPS lands, and although spotted owl pairs were located at most sites, no nests were found. A non-nesting year for spotted owls has never been seen in 10 years of monitoring in Marin County, but has occurred in the Pacific Northwest. This spring also marked the first documented nesting of barred owls in Marin County. The barred owl young were located near Muir Woods at the end of June. Barred owls are considered non-native in the Western states and have displaced spotted owls in the Pacific Northwest. Their recent invasion leaves us to speculate on the impact they will have on the local spotted owl populations and underscores the importance of monitoring.

Rare Plant Monitoring

Monitoring and protocol development for two rare plant species, *Chorizanthe valida* (Sonoma spineflower) and *Alopecurus aequalis* var. *sonomensis* (Sonoma water foxtail), continued this year with support from Point Reyes. Spineflower numbers rebounded to levels seen in 2005 after a drop in numbers during 2006. The spineflower protocol will be submitted in early 2008, and the water foxtail protocol is planned for late 2008.

Native pollinator on Sonoma spineflower

Plant-out-of-Place ID card.

Early Detection of Invasive Plant Species

The pilot Weed Watchers program got underway this year at Golden Gate. This volunteer program was designed to find invasive plant species before they spread and become established. Once the invasive plants are found and mapped, the information goes directly to park-based eradication teams. In 2007, the program covered over 30 miles along roads and trails where invasive species are likely to get established. The official Weed Watcher website is http://www1.nature.nps.gov/im/units/sfan/vital_signs/Invasives/weed_watchers.cfm and can also be accessed at www.weedwatcher.org. One popular outreach tool developed by the Network, which is sure to help other partners and agencies inidentifying invasive species, is the new beautiful and glossy "Plant-out-of-Place" ID cards. The ID cards have pictures and information on priority invaders for the San Francisco Bay Area. ID cards for Golden Gate and Point Reyes are available for download at the Weed Watcher website.

Raptor Monitoring

Raptor monitoring just completed its 21st year with a continued emphasis on the prairie falcons nesting at Pinnacles NM. Nine prairie falcon nests were active this year, with 34 nestlings fledged. For the third year in a row, a peregrine falcon pair successfully nested produced fledglings within the Monument. Overall raptor productivity throughout the park this year has been below average, with nest species diversity high, but total confirmed nest sites lower than last year. Other nesting raptors observed this year were: golden eagles, red-tailed and red-shouldered hawks, coopers hawks, sharp-shinned hawks, great-horned owls, a long-eared owl, a white-tailed kite, and a turkey vulture.

Juvenile Prairie Falcon. Photo by Gavin

Science Communication

Building on the momentum of a science communication workshop during the fall of 2006, the Network continued its efforts to make inventory and monitoring results available to a wider audience. Much of the work was credited to two science communication interns that were shared with the Pacific Coast Science and Learning Center. Network staff and interns developed a series of executive briefings (described below), participated in Fourth Annual Park Partners Symposium hosted by Golden Gate, hosted a booth at John Muir on Earth Day, participated in open houses, and attended and presented at scientific conferences (e.g., California Invasive Plant Council Symposium, American Fisheries Society, Ecological Society of America, George Wright Society, California Climate Change Conference).

Executive Briefings

This year the Network completed 21 executive briefings. Executive briefings are a vital education and outreach tool and are available to the staff and the public. These two-page handouts summarize specific research projects that have been completed or are on-going within the parks. All of the briefings are available on the web (http://www1.nature.nps.gov/im/units/sfan/ExecutiveBriefings.cfm) including completed inventories and current monitoring efforts.

Network Internet and Intranet Websites

The Network's internet (http://www1.nature.nps.gov/im/units/sfan/index.cfm) and intranet pages (http://www1.nrintra.nps.gov/im/units/SFAN/index.cfm) are updated regularly with new information. For example, nearly all final reports from the Network-funded inventories (2000-2004) are now posted. There are

Earth Day visitor at John Muir.

also photo galleries, an interactive conceptual model on spotted owls, and links to outreach and education publications. The intranet website is also up and running with more additional information available for NPS staff only.

Podcasts

To highlight a new medium, one of the science communication interns, who previously worked for National Public Radio, completed podcasts of two science projects in the parks. One of the 4-minute audio segments brings to life the long-term coho monitoring efforts with sounds from the streams and interviews with the researchers. The program tells the story of the coho and highlights why they are important to monitor. The audio can be downloaded from the Network website: http://www1.nature.nps.gov/im/units/sfan/index.cfm.

Partnerships

Partnerships with other agencies and individuals play a critical role in the inventory and monitoring work conducted by the network.

Citizen Science

Citizen scientists support many of the network's monitoring efforts, including stream fish assemblages, spotted owls, pinnipeds, rare plants, and the early detection of invasive plant species. This year, volunteers contributed over 4,266 hrs, valued at over $72,522.

Coho Monitoring Grants

A $149,000 grant received by Point Reyes National Seashore Association from the California Department of Fish and Game (CDFG) continued to support ongoing monitoring efforts in 2007. Data from the monitoring efforts are of great interest to the state as part of the statewide fisheries program. A new grant proposal was submitted to CDFG in 2007 to support monitoring over the next four years.

New Early Detection Partnership

This year was the start of the Bay Area Early Detection Network (BAEDN), an alliance of organizations and land management agencies in the San Francisco Bay Area focused on sharing distribution and control information about highly invasive but not-yet-widespread plant species to prevent their spread throughout the region. I&M Staff helped secure grant funding to coordinate the effort.

For More Information

Marcus Koenen, Inventory and Monitoring Coordinator, National Park Service, San Francisco Bay Area Network, Fort Cronkhite Bldg. 1063, Sausalito, CA 94965. Marcus_Koenen@nps.gov.

SFAN Webage: http://www1.nature.nps.gov/im/units/sfan/index.cfm)